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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

STARKS, WILBERT L

ART UNIT	PAPER NUMBER
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2129

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/873,719

Applicant(s)

HECKERMAN ET AL.

Examiner

Wilbert L. Starks, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-64 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) _____ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 101

1. 35 U.S.C. §101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

the invention as disclosed in claims 1-64 is directed to non-statutory subject matter.

2. Claims 1-64 are not claimed to be practiced on a computer, therefore, it is clear that the claims are not limited to practice in the technological arts. On that basis alone, they are clearly nonstatutory.

3. Regardless of whether any of the claims are in the technological arts, none of them is limited to practical applications in the technological arts. Examiner finds that *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994) controls the 35 U.S.C. §101 issues on that point for reasons made clear by the Federal Circuit in *AT&T Corp. v. Excel Communications, Inc.*, 50 USPQ2d 1447 (Fed. Cir. 1999). Specifically, the Federal Circuit held that the act of:

...[T]aking several abstract ideas and manipulating them together adds nothing to the basic equation. *AT&T v. Excel* at 1453 quoting *In re Warmerdam*, 33 F.3d 1354, 1360 (Fed. Cir. 1994).

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Examiner finds that Applicant's "computer readable data set" references are just such abstract ideas. True, had Applicant claimed a "computer readable medium," Applicant would have claimed a "product of manufacture" and would get "two bites at the apple," as it were, to have the claims analyzed as statutory (that is, based on the claim that it is a "product of manufacture" or based on the underlying method of the claim.) Such is not the case here...Applicant claims a "computer readable data set." As such, a computer readable data set is not computer program steps on a computer readable medium that causes the computer to do a specific thing...it is merely an abstract data set.

4. Examiner bases his position upon guidance provided by the Federal Circuit in *In re Warmerdam*, as interpreted by *AT&T v. Excel*. This set of precedents is within the same line of cases as the *Alappat-State Street Bank* decisions and is in complete agreement with those decisions. *Warmerdam* is consistent with *State Street's* holding that:

Today we hold that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation because it produces 'a useful, concrete and tangible result' -- a final share price momentarily fixed for recording purposes and even accepted and relied upon by regulatory authorities and in subsequent trades. (emphasis added) *State Street Bank* at 1601.

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5. True enough, that case later eliminated the “business method exception” in order to show that business methods were not per se nonstatutory, but the court clearly *did not* go so far as to make business methods *per se statutory*. A plain reading of the excerpt above shows that the Court was *very specific* in its definition of the new *practical application*. It would have been much easier for the court to say that “business methods were per se statutory” than it was to define the practical application in the case as “...the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price...”

6. The court was being very specific.

7. Additionally, the court was also careful to specify that the “useful, concrete and tangible result” it found was “a final share price momentarily fixed for recording purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.” (i.e. the trading activity is the further practical use of the real world monetary data beyond the transformation in the computer – i.e., “post-processing activity”.)

8. Applicant cites no such specific results to define a useful, concrete and tangible result. Neither does Applicant specify the associated practical application with the kind of specificity the Federal Circuit used.

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9. Furthermore, in the case *In re Warmerdam*, the Federal Circuit held that:

...[T]he dispositive issue for assessing compliance with Section 101 in this case is whether the claim is for a process that goes beyond simply manipulating 'abstract ideas' or 'natural phenomena' ... As the Supreme Court has made clear, '[a]n idea of itself is not patentable, ... taking several abstract ideas and manipulating them together adds nothing to the basic equation'. *In re Warmerdam* 31 USPQ2d at 1759 (emphasis added).

10. Since the Federal Circuit held in *Warmerdam* that this is the “dispositive issue” when it judged the usefulness, concreteness, and tangibility of the claim limitations in that case, Examiner in the present case views this holding as the dispositive issue for determining whether a claim is “useful, concrete, and tangible” in similar cases.

Accordingly, the Examiner finds that Applicant manipulated a set of abstract “computer readable data sets” to solve purely algorithmic problems in the abstract (i.e., what *kind* of “data” is used? Algebraic word problems? Boolean logic problems? Fuzzy logic algorithms? Probabilistic word problems? Philosophical ideas? Even vague expressions, about which even reasonable persons could differ as to their meaning? Combinations thereof?) Clearly, a claim for algorithmic manipulation of “computer readable data sets” is provably even more abstract (and thereby less limited in practical application) than pure “mathematical algorithms” which the Supreme Court has held are per se nonstatutory – in fact, it *includes* the expression of nonstatutory mathematical algorithms.

11. Since the claims are not limited to exclude such abstractions, the broadest reasonable interpretation of the claim limitations includes such abstractions. Therefore, the claims are impermissibly abstract under 35 U.S.C. §101 doctrine.

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12. Since *Warmerdam* is within the *Alappat-State Street Bank* line of cases, it takes the same view of “useful, concrete, and tangible” the Federal Circuit applied in *State Street Bank*. Therefore, under *State Street Bank*, this could not be a “useful, concrete and tangible result”. There is only algorithmic manipulation of abstract ideas.

13. The Federal Circuit validated the use of *Warmerdam* in its more recent *AT&T Corp. v. Excel Communications, Inc.* decision. The Court reminded us that:

Finally, the decision in *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994) is **not to the contrary**. *** The court found that the claimed process did nothing more than manipulate basic mathematical constructs and concluded that ‘taking several abstract ideas and manipulating them together adds nothing to the basic equation’; hence, the court held that the claims were properly rejected under §101 ... Whether one agrees with the court’s conclusion on the facts, the holding of the case is a straightforward application of the basic principle that mere laws of nature, natural phenomena, and abstract ideas are not within the categories of inventions or discoveries that may be patented under §101. (emphasis added) *AT&T Corp. v. Excel Communications, Inc.*, 50 USPQ2d 1447, 1453 (Fed. Cir. 1999).

14. Remember that in *In re Warmerdam*, the Court said that this was the dispositive issue to be considered. In the *AT&T* decision cited above, the Court reaffirms that this is the issue for assessing the “useful, concrete, and tangible” nature of a set of claims under §101 doctrine. Accordingly, Examiner views the *Warmerdam* holding as the dispositive issue in this analogous case.

15. The fact that the invention is merely the manipulation of *abstract ideas* is clear. The data referred to by Applicant’s phrase “computer readable data set” is simply an abstract construct that does not limit the claims to the transformation of real world data (such as monetary data or heart rhythm data) by some disclosed process.

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Consequently, the necessary conclusion under *AT&T*, *State Street* and *Warmerdam*, is straightforward and clear. The claims take several abstract ideas (i.e., “computer readable data sets” in the abstract) and algorithmically manipulate them together adding nothing to the basic equation. Claims 1-64 are, thereby, rejected under 35 U.S.C. §101.

16. Regarding the “system” recitals in claims 1 – 29, 32-34, 46, and 63-64 and the presumed “product of manufacture” claims in claims 42 and 53 the invention is still found to be nonstatutory. Any other finding would be at variance with current case law. Specifically, the Federal Circuit held in *AT&T v. Excel*, 50 USPQ2d 1447 (Fed. Cir. 1999) that:

Whether stated implicitly or explicitly, we consider the scope of Section 101 to be the same regardless of the form – machine or process – in which a particular claim is drafted. *AT&T v. Excel*, 50 USPQ2d 1447, 1452 citing *In re Alappat*, 33 F.3d at 1581, 31 USPQ2d at 1589 (Rader, J., concurring) (emphasis added.)

17. Examiner considers the scope of Section 101 to be the same regardless of whether Applicant *claims* a “process”, “machine”, or “product of manufacture”. While the “system” recitals in the preambles of claims 1 – 29, 32-34, 46, and 63-64 make the claims ostensibly drawn to be “apparatus” claims, they are insufficient by themselves to limit the claims to statutory subject matter. Likewise, the presumed attempts to limit claims 42 and 53 to “product of manufacture” claims are insufficient by themselves to limit the claims to statutory subject matter. Examiner’s position is clearly consistent with

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Alappat, and *AT&T* and is implicitly consistent with *Warmerdam* and *State Street*.

Accordingly, those claims are also properly rejected.

Claim Rejections - 35 U.S.C. §112

The following is a quotation of the first paragraph of 35 U.S.C. §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-64 are rejected under 35 U.S.C. §112, first paragraph because current case law (and accordingly, the MPEP) require such a rejection if a §101 rejection is given because when Applicant has not in fact disclosed the practical application for the invention, as a matter of law there is no way Applicant could have disclosed *how* to practice the *undisclosed* practical application. This is how the MPEP puts it:

(“The how to use prong of section 112 **incorporates as a matter of law** the requirement of 35 U.S.C. 101 that the specification disclose as a matter of fact a practical utility for the invention.... If the application fails as a matter of fact to satisfy 35 U.S.C. §101, then the application **also fails as a matter of law** to enable one of ordinary skill in the art to use the invention under 35 U.S.C. § 112.”); In re Kirk, 376 F.2d 936, 942, 153 USPQ 48, 53 (CCPA 1967) (“Necessarily, compliance with § 112 requires a description of how to use presently useful inventions, **otherwise an applicant would anomalously be required to teach how to use a useless invention.**”). See, MPEP 2107.01(IV), quoting In re Kirk (emphasis added).

Therefore, claims 1-64 are rejected on this basis.

Claim Rejections - 35 U.S.C. § 102

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18. The following is a quotation of the appropriate paragraphs of 35 U.S.C. §102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

19. Claims 1, 19, 30, 42, and 64 are rejected under 35 U.S.C. §102(b) as being anticipated by Guha et al¹. Specifically:

Claims 1, 19, 30, 42, and 64

Claim 1, 19, 30, 42, and 64's "a first training algorithm that efficiently builds a rough model from a subset of the computer readable data set" is anticipated by Guha et al., Fig. 2, see the "Network Performance Evaluation" element.

Claim 1, 19, 30, 42, and 64's "An evaluation component that determines whether the subset of the computer readable data set is an appropriate subset to build a model for the computer readable data set; and" is anticipated by Guha et al., Fig. 2, see the "Network Performance Evaluation" and the "New, Untrained Network" elements.

Claim 1, 19, 30, 42, and 64's "A second training algorithm that builds a refined model for the computer readable data set from the subset if deemed appropriate by the evaluation component." is anticipated by Guha et al., Fig. 2, see the "Genetic Algorithm" and the "Trained Network" elements.

¹ Guha et al. (U.S. Patent Number 5,140,530; dated 18 AUG 1992; class 706; subclass 013)

Response to Arguments

20. Applicant's arguments filed 03/01/2005 have been fully considered but they are not persuasive. Specifically:

Argument 1

The subject claims relate to systems and methods that facilitate building a model to characterize data based on an appropriately sized subset of the computer readable data set. In particular, independent claim 1 as amended (and similarly independent claims 19, 30, 42, and 64) recites an evaluation component that determines whether the **subset of the computer readable data set is an appropriate subset to build a model for the computer readable data set and a second training algorithm that builds a refined model for the computer readable data set from the subset if deemed appropriate.** Guha et al. fails to anticipate or suggest such claimed aspects.

Examiner interprets the term "computer readable data set" to mean "model design parameters", since they are being used to construct the model...and since Applicant refused to specify what they were under §101/112 in response to the first Office Action, as shown above in Applicant's argument.

With this in mind, the "network blueprints" shown in Fig. 2 are the design parameters (or the "subsets" of "computer readable data", as Applicant denotes them) being used to build the candidate models in the genetically evolving population. The first training algorithm is the genetic training algorithm that is searching for appropriate neural network architectures.

Now, the "second training algorithm", as claimed by Applicant, is the algorithm that is used to take the untrained network, at the bottom of Fig. 2, into a trained state, at the bottom-right of Fig. 2. The "appropriateness" recited by Applicant is embodied in the

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genetic fitness measure of the individual network that caused it to be selected as a high fitness individual.

Argument 2

More particularly, Guha et al. does not teach or suggest **an evaluation component that determines whether the subset of the computer readable data set is an appropriate subset to build a model** for the computer readable data set. The Office Action contends that such aspects are anticipated by Guha et al. at Fig. 2 (the Network Performance Evaluation" and 'New, Untrained Network" elements). Applicants' representative respectfully disagrees with such contentions. Guha et al. instead relates to cyclically updating blueprints (e.g., bit string designs for different neural networks) by using a genetic algorithm based on fitness. (See col. 2, ln. 63-65), The fitness of a network is a measure of worth, which is based on learning speed, accuracy and cost factors such as the size and complexity of the networks. (See col. 2, ln 66 - col. 3, ln. 7).

The "evaluation component" in the prior art is the box that performs network performance evaluation in Fig. 2. Specifically, the genetic algorithm uses this process to determine whether the specific network blueprints (i.e., subsets of the computer readable data set) are appropriate subsets to build a model for the computer readable data set.

Argument 3

Guha et al. however, is silent in regards to **determining whether the subset of the computer readable data set is an appropriate subset to build a model** for the computer readable data set. Thus, Guha et al. fails to anticipate or suggest such aspects of the subject claims.

The "evaluation component" in the prior art is the box that performs network performance evaluation in Fig. 2. Specifically, the genetic algorithm uses this process to determine whether the specific network blueprints (i.e., subsets of the computer

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readable data set) are appropriate subsets to build a model for the computer readable data set.

Argument 4

Furthermore, Guha et al. does not teach or suggest a second training algorithm that builds a refined model for the computer readable data set from the subset if deemed appropriate as recited in amended independent claim 1 (and similarly in independent claims 19, 30, 42, and 64). Guha et al. updates the blueprints in a cyclical manner as depicted in Fig. 2. Thus, the same genetic algorithm is used to update the blueprint every time an update is effectuated. On the contrary, the subject claims a different training algorithm (the second training algorithm) is utilized to build a refined model. Moreover, Guha et al. is silent regarding building the refined model from the subset if deemed appropriate. Therefore, Guha et al. fails to anticipate or suggest such claimed aspects.

The "second training algorithm", as claimed by Applicant, is the algorithm that is used to take the untrained network, at the bottom of Fig. 2, into a trained state, at the bottom-right of Fig. 2. The "appropriateness" recited by Applicant is embodied in the genetic fitness measure of the individual network that caused it to be selected as a high fitness individual.

Conclusion

21. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

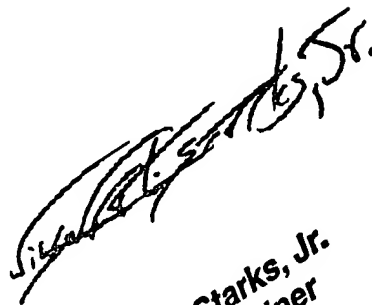
Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Wilbert L. Starks, Jr. whose telephone number is (571) 272-3691.

Alternatively, inquiries may be directed to the following:

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WLS

12 May 2005



Wilbert L. Starks, Jr.
Primary Examiner
Art Unit - 2121